Mountain West Transmission Group
Frequently Asked Questions
Updated January 5, 2017

I. Background

A. What is the Mountain West Transmission Group?

The Mountain West Transmission Group ("Mountain West") is an informal collaboration of electricity service providers that are working to develop strategies to adapt to the changing electric industry. The group was formed in early 2013 to evaluate an array of options ranging from a common transmission tariff to Regional Transmission Organization (RTO) membership.

1. Based on the results of evaluations performed to-date, Mountain West is focusing its attention on full membership in an existing RTO.
2. If Mountain West joins an RTO, it would be under that RTO's existing governance, market, and tariff provisions.[1]
3. Participation in Mountain West is voluntary; therefore, if Mountain West joins an RTO, each electricity service provider will ultimately decide for itself if it will join with the other Mountain West participants.

B. Who are the Mountain West Transmission Group participants?

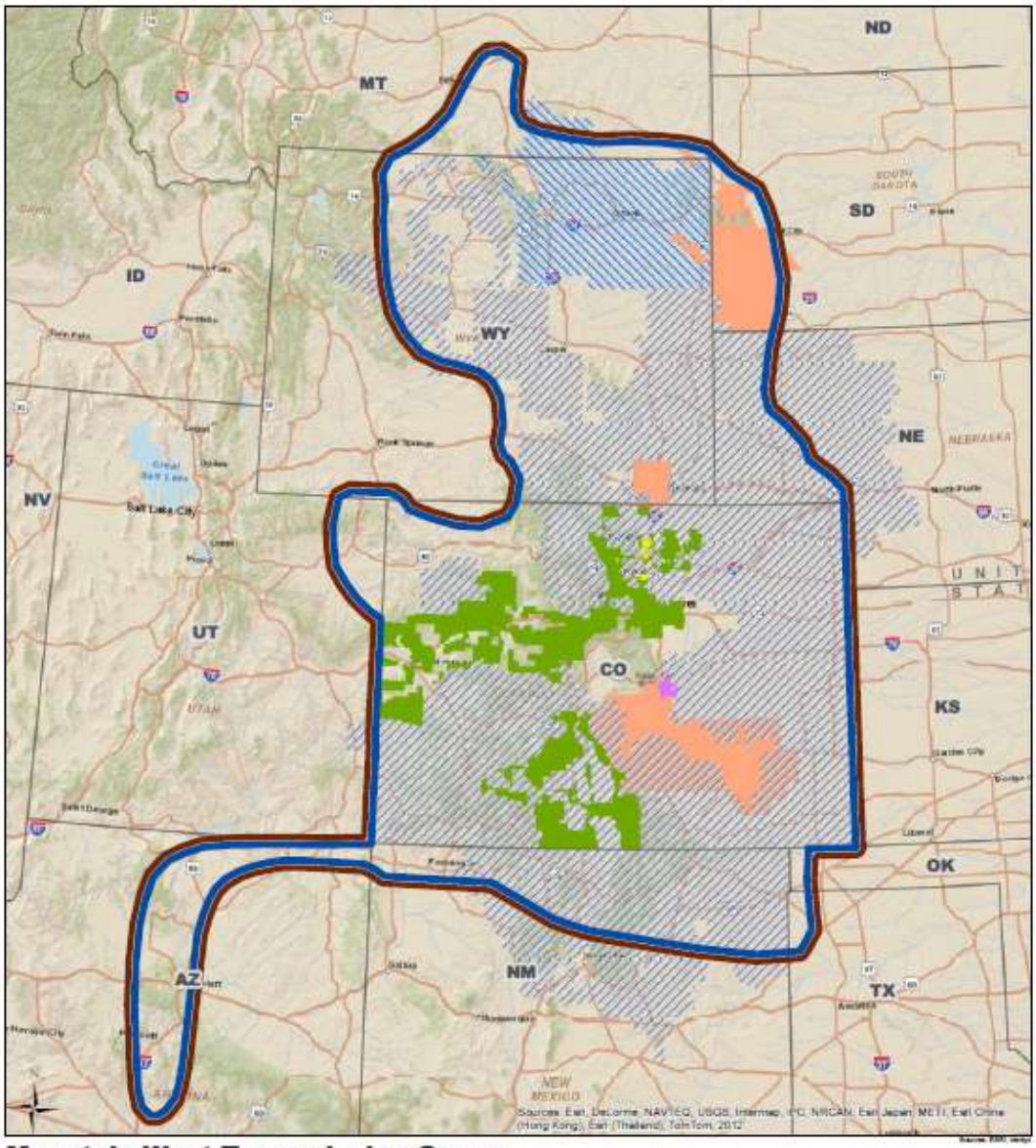
Mountain West includes two investor-owned utilities; two municipal electricity providers; two generation and transmission cooperatives; and two federal power marketing administration projects. The Mountain West participants are a subset of the WestConnect planning region and are members of the Colorado Coordinated Planning Group (CCPG). Current participants are listed below and other electricity providers may join after initial implementation.

1. Basin Electric Power Cooperative (BEPC)
2. Black Hills Corporation's three electric subsidiaries:
   a. Black Hills Power (BHP)
   b. Black Hills Colorado Electric Utility Company (BHCE)
   c. Cheyenne Light Fuel & Power Company (Cheyenne)
3. Colorado Springs Utilities (CSU)
4. Platte River Power Authority (PRPA)
5. Public Service Company of Colorado (PSCo)
6. Tri-State Generation and Transmission Association (Tri-State)
7. Western Area Power Administration (WAPA)
   a. Loveland Area Projects (LAP)
   b. Colorado River Storage Project (CRSP)

[1] This would be with the exception of tariff revisions to add the participants, incorporate specific requirements based on unique organizational characteristics, and governance modifications to add participating states.

C. What is the service territory of the Mountain West participants?

The proposed service territory is shown in the following map. It includes the WAPA Colorado/Missouri Balancing Authority and the PSCo Balancing Authority.



D. What's the tail that goes from the Four Corners area into Central Arizona?

The "tail" is a set of transmission lines owned by WAPA's Colorado River Storage Project.

II. What options are being evaluated?

Mountain West is evaluating (A) a common transmission tariff without a wholesale market and (B) Regional Transmission Organization (RTO) membership which includes both a common tariff and a wholesale market.

Based on the results of evaluations to-date, the group is focusing its attention primarily on full RTO participation.

A. Common Tariff Option

What is a common transmission tariff?

Today, each Mountain West participant has its own transmission tariff or tariffs. These tariffs set the terms and rates for providing transmission service to all transmission customers; which includes selling transmission service, performing transmission studies, interconnecting new generators, and many other wholesale electricity functions. The common transmission tariff would be a single tariff consisting of multiple transmission zones. Under a zonal design, the customers pay the transmission rate for the zone in which their loads are located and do not incur additional transmission charges for transporting energy across other zones in the footprint. Zonal rate design is used by all RTOs in the U.S. except the California Independent System Operator (CAISO) and the New York Independent System Operator (NYISO.)

Why create a common tariff?

Currently, there are nine transmission tariffs in the Mountain West footprint. If the nine tariffs were to be combined into one, the Mountain West participants would collectively:

1. Make more efficient use of the existing transmission system by transitioning away from contract-path to flow-based transmission sales. This allows more optimal utilization of available transfer capability.
2. Eliminate transmission rate pancaking for grid use. “Rate pancaking” is a term used to describe the addition of delivery charges that occurs when wheeling energy across multiple transmission systems. Rate pancaking impedes the use of least-cost generation resources, including renewable resources, by increasing transaction costs.
3. Support improved transmission planning and interconnection processes by increasing coordination between and across the systems. This would help to avoid duplication of facility investments and may create additional siting opportunities for new resources.

B. Regional Transmission Organization (RTO) Option

What functions does an RTO perform?

1. Manages the operation of the transmission systems and generation resources of multiple electricity providers to optimize the utilization of the assets.
2. Maintains a wide-area view and real-time situational awareness of the entire footprint to monitor and manage the reliability of the system.
3. Serves as the centralized operator for a Day-2 Market for auction-based electricity products including varying combinations of energy, capacity, and ancillary services. The markets include day-ahead unit commitment, reliability unit commitment, and real-time dispatch.
4. Provides market monitoring oversight.
5. Facilitates transmission planning across multiple transmission systems and states.
6. Performs ongoing assessments to ensure that generation and transmission resource adequacy are in alignment with reliability, economic, and public policy requirements.

Why consider an RTO?

As the rules and regulations associated with operating the system have evolved over time, it has become an increasingly complex task to optimize the efficiency of the system, while concurrently managing reliability. RTOs are able to use their wide-area view, real-time situational awareness, and ability to optimize market dispatch operations across a broader footprint. This can lead to enhanced coordination, increased reliability, greater efficiency, and more economic integration of renewable resources.

What are the Benefits of RTO Market Participation?

Participation in an RTO may provide significant value for Mountain West, which will be evaluated as part of detailed ongoing RTO discussions. For example, the Mid-Continent Independent System Operator (MISO)[2], the Southwest Power Pool (SPP)[3], and PJM Interconnection (PJM)[4] have recently released statements regarding the value their RTOs bring to their respective regions. The RTO's regional operational control permits more efficient grid use. This results in daily operational cost savings. This also creates savings over time through reduced regional infrastructure investments in response to growth in demand or changes in energy production resources.

Utilities participating in an RTO market have benefited from more efficient commitment and dispatch of generation, improved operating reserve procurement, and more efficient wind and solar resource integration. The RTO

[2] https://www.misoenergy.org/WhatWeDo/ValueProposition/Pages/ValueProposition.aspx
[3] https://www.spp.org/about-us/newsroom/total-savings-from-spp-s-markets-cross-the-1-billion-mark/
[4] http://www.pjm.com/about-pjm/value-proposition.aspx

provides its grid access and wholesale electricity market services through a single transmission tariff.

III. What analyses have been done and what are the results to-date?

A. Transmission Cost Study

In 2013, the Mountain West participants engaged a consultant to evaluate potential common tariff transmission pricing structures, evaluate potential cost shifts, and develop a method to mitigate those cost shifts. The transmission cost study resulted in the following preliminary design proposal:

1. The Mountain West footprint will be divided into multiple pricing zones
2. Network customers pay the zonal rate in which their load sinks
   a. Owners in each zone retain revenue for zonal network load
   b. Elimination of internal point to point (PTP) transmission agreements
3. Single Regional Through and Out Rate (RTOR) applied to PTP sales
   a. RTOR = Total Mountain West Annual Transmission Revenue Requirement (ATRR) divided by Total Mountain West Load
   b. Revenues allocated based on ATRR and MegaWatt-Mile split, after mitigation
   c. Cost shifts would be mitigated over seven years

Current status: The methods for the transmission cost evaluation and cost shift mitigation are fully developed and the model is currently being updated with actual 2015/2016 costs and revenues.

B. Production Cost-Benefits Analysis

Mountain West initiated a production cost study in March 2016 with the Brattle Group, a consulting firm, to perform a detailed analysis of the potential production cost savings from 1) a common tariff and 2) a common tariff with full RTO market participation.

The study was conducted in two phases. Results of the analyses indicate that RTO membership has the potential to provide greater benefits than a common tariff alone. In anticipation of the greater level of benefits, Mountain West is now focusing its efforts on further evaluation of potential RTO membership.

The estimated aggregate production cost savings from the 2016 and 2024 studies for the Mountain West footprint are shown below in millions of dollars per year. The results shown assume current trends in load growth, natural gas prices, inflation, etc. Confidential individual entity results were prepared for each Mountain West participant.

Aggregate Production Cost Savings (millions per year)	Annual Benefits 2016	Annual Benefits 2024
Single Tariff/ Existing Bilateral Market	$14 M	Not Studied
Single Tariff/ RTO "Day 2" Market	$53 M	$71 M

A. Other potential savings not included in the current analysis

Among other things, RTO markets bring additional savings for real-time dispatch optimization of energy and ancillary services, as well as potential planning reserve margin reductions. These savings are not reflected in the studies MWTG has commissioned.

B. Request for Information on Tariff Administration and RTO Services

In May 2016, Mountain West issued a Request for Information (RFI) for an RTO to provide services ranging from common tariff administration to full RTO Market membership

The RFI was delivered to four RTOs: the California Independent System Operator (CAISO), the Mid-Continent Independent System Operator (MISO), PJM Interconnection (PJM), and the Southwest Power Pool RTO (SPP). Responses to the RFI were received in mid-July 2016. The range of RTO costs to provide tariff administration or full RTO membership are shown below.

RTO Costs (in millions)	Start-Up Cost from RTO	Annual Cost
Tariff Administration only	$4-7 M	$3-7 M
RTO Membership	NA[5]	$24-60 M

IV. What is the current status and what are the next steps?

A. Has Mountain West reached any consensus?

Yes. The participants in Mountain West have signed a non-binding confidential Memorandum of Understanding (MOU.) The MOU memorializes certain rate design details that have been agreed upon by the Mountain West participants.

[5] Start-up costs for the RTO to incorporate the Mountain West participants into the membership are included in the annual cost.

B. What are the next steps?

The Mountain West participants have executed a non-binding letter of understanding to hold detailed discussions with SPP about how the RTO might accommodate the terms of the Mountain West MOU and other related rate design specifications. This is not a decision to join SPP. This step is focused on having further and more in-depth discussions with SPP to determine whether the needs of Mountain West can be met. In the event these discussions are unsuccessful, the Mountain West participants may pursue similar discussions with MISO, PJM, or both.

C. What approvals are required?

The process of transferring functional control of transmission and generation assets to an RTO entails significant authorizations and approvals which vary by type of entity. Mountain West is comprised of four different types of electricity service providers including two investor-owned utilities; two municipal electricity providers; two generation and transmission cooperatives; and two federal power marketing administration projects. Each of the participants will have a multi-step approval process involving some combination of executive, board of director, customer, city, state, and federal approvals. Ultimately, approval from the Federal Energy Regulatory Commission (FERC) will be required.

D. What is the estimated Mountain West timeline?

Ongoing:	Customer, regulator, and stakeholder meetings
January 2017:	Mountain West consensus on specific RTO for additional discussions
Early - Mid 2017:	Discussions with RTO; Mountain West entities develop proposed membership recommendation
Mid 2017 – Mid 2018:	Stakeholder processes; state and federal regulatory approvals
2019:	Implementation